PART IV

Section 1-C

RULES, ORDERS AND NOTIFICATIONS UNDER CENTRAL ACTS AND ORDINANCES

NOTIFICATION.

No. L.D. 804—Legis. 5-52-48, dated Bangalore, 23rd July 1952.

Ordered that Notification No. S.R.O. 1113, dated the 11th June 1952 of the Ministry of Works, Housing and Supply amending the Indian Boiler Regulations, 1950, published in the *Gazette of India*, Part II, Section 3, dated the 21st June 1952, be republished in the *Mysore Gazette*, for general information.

By Order of His Highness the Maharaja,

N. R. JAYA RAO,
Legal Remembrancer and
Secretary to Government,
Law Department.

GOVERNMENT OF INDIA.

MINISTRY OF WORKS, HOUSING AND SUPPLY.

(Central Boilers Board).

New Delhi, the 11th June 1952.

S.R.O. 1113.—In exercise of the powers conferred by section 28 of the Indian Boilers Act, 1923 (V of 1923), the Central Boilers Board directs that the following further amendments shall be made in the Indian Boiler Regulations, 1950, the same having been previously published as required by sub-section (1) of section 31 of the said Act, namely :—

For regulations 275, 276, 277 and 278 of the said Regulations, and for the table and figures referred to therein, the following shall be substituted, namely :—

"275. *Shape of Dished End Plate.*—When an end plate is dished to semi-ellipsoidal, partial spherical or hemispherical form, it shall comply with the following : (See Fig. 23).

(a) For ends of partial spherical form the inside radius of dishing R shall not be greater than the outside diameter D of the end plate and the inside corner radius r shall not be less than four times the thickness of the end plate or $2\frac{1}{2}$ inches or 12·5 per cent of the inside diameter of shell, whichever is the greatest.

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(b) For ends of semi-ellipsoidal form the ratio of the major axis to the minor axis shall not be greater than 2.

276. *General.*—The thickness T specified in equation 75 of Regulation 278 is the thickness of the end plate after manufacture and is applicable over the whole area of the end plate up to the point where, for ends of partially spherical shape, the dishing radius joins the corner radius; from this point a gradual thining is permissible up to a maximum of 10 per cent of the thickness T at the point where the corner radius joins the straight portion of flanged end plate. A similar gradual thining is permissible for end plates of semi-ellipsoidal shape. This permissible reduction in thickness applies also to flange for the manhole opening. In no case, however, when the end plate is butt welded to the drum shell, shall the thickness of the edge of the flange for connection to the shell be less than the thickness of an unpierced seamless shell of the same diameter and material, determined by equation 72.

277. *End Plate with Manhole.*—When an end plate has a flanged-in-manhole the depth of the flange forming the access opening measured from the outer surface of the plate at the minor axis of the opening shall be not less than $\sqrt{TXW}$

Where T = Thickness of the end plate in inches;
W = Minor axis of the manhole in inches.

NOTE.—The corner radius of the manhole flange rm shall be not less than 1″ (See Fig. 23).

278. (*a*) *End Plate Subject To Pressure On the Concave Side.*—The Maximum working pressure of unstayed Dished End Plates subject to pressure on the concave side shall be determined by the following formula:

$$WP = \frac{2f(T-0{\cdot}1)}{DFK} \qquad \text{(Eqn. 74)}$$

Where WP = Working Pressure in lb./sq. in.

f = Permissible stress in lbs./sq. in. at working metal temperature of the drum end plate. (See table below).

T = Thickness of the end plate in inches.

D = Outside diameter of the end plate in inches.

F = 1 for end plates without holes, or having only reinforced holes, or having unreinforced widely spaced holes not exceeding four times the plate thickness or 2½ inches, whichever is the less.

= 1·15 for end plates having a central flanged manhole or hand hole (complying with Eqn. 73).

= a constant whose value is more than 1·15 for end plates having unreinforced holes of dimensions greater than 2½″ or four times the thickness of plate.

= End plates should not have large unreinforced holes, eccentric flanged manholes or hand holes, wherever practicable and in those cases the Chief Inspector of Boilers may in his discretion use such values of F as would meet the circumstances, dependent upon the size, shape and position of these openings in the end plate.

K = A factor dependent upon the ratio $\frac{h}{D}$ where h is the external height, and generally obtained from the curve shown in Fig. 22.

In no case shall K be taken as less than $1{\cdot}15 - \frac{R}{D}$ or $0{\cdot}12 - \frac{D}{r}$

(See Fig. 23).

NOTE 1.—The external height of dishing h may, for ends of partial spherical form, be determined as follows: (See Fig. 23):—

$$h = R_2 - \sqrt{\left(R_2 - \frac{D}{2}\right) \times \left(R_2 + \frac{D}{2} - 2r_2\right)} \qquad \text{(Eqn. 75)}$$

NOTE 2.—Where the above rules are applied to small drum ends with manhole openings, the dimensions "r" and "rm" (See Fig. 23) apply only to the section of the end containing the minor axis of the opening, *i.e.* "r" and "rm" need not apply throught the whole periphery of such ends.

Maximum Permissible Stresses at Working Metal Temperatures for Ends Plates Dished From Plate.

Working metal temperature	Tensile Strength of plate in lbs. per sq. inch.				
	24-28 tons per sq. in.	26-30 tons per sq. in.	28-32 tons per sq. in.	32-36 tons per sq. in.	34-38 tons per sq. in.
Up to—					
650°F ...	13400	14500	15700	18000	19000
700°F ...	13200	14300	15200	17200	18200
750°F ...	12000	12700	13400	14800	15500
800°F ...	10500	10900	11300	12100	12500
850°F ...	8500	8700	8900	9300	9500
900°F ...	6300	6300	6300	6300	6300

Intermediate values may be interpolated.

NOTE 1.—The use of carbon steel plate having a tensile range in excess of 28/32 ton/sq. in. is not permissible for drum ends dished from plate.

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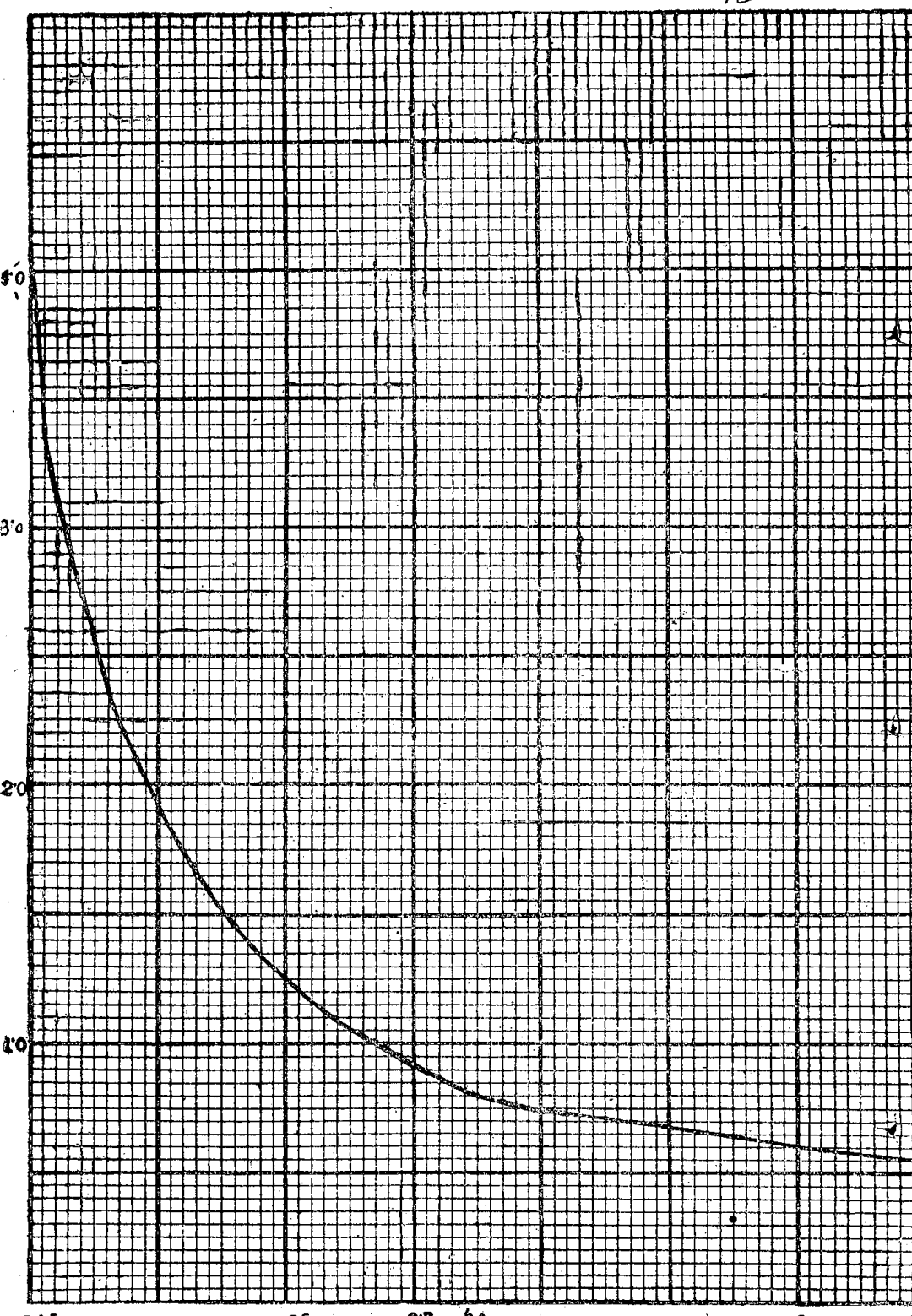

FIG 22.

K = A FACTOR FOR USE IN EQUATION 74 REGULATION 278.

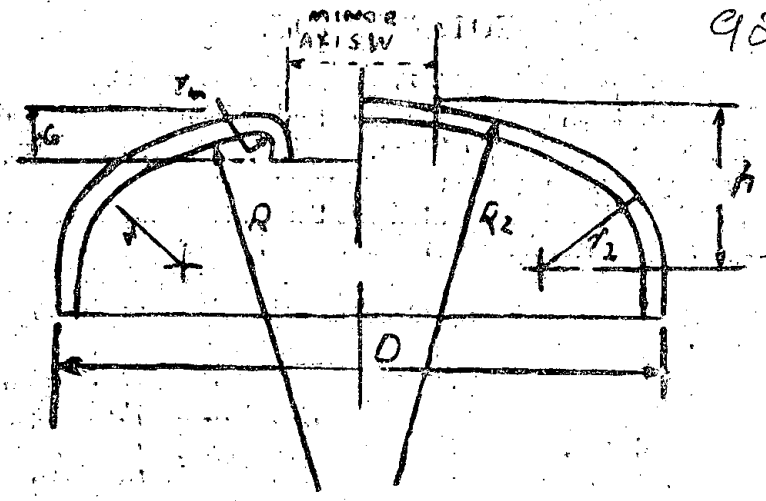

Fig 23"

[No. M/BL-304(60).]

S. K. GUHA, for *Secy.*